

# Spiral-Up Implementation of NPD Portfolio and Pipeline Management

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Almost all organizations have benefited from doing more projects faster. But new product development can only go so fast without increasing the chances of failure or decreasing expected financial return. Still, it is common to see senior managers push harder on the same "more projects faster" approach.

Effective Portfolio and Pipeline Management (PPM) helps overcome this difficult challenge. PPM pulls together project selection, project mix management, and resource assignment management. It enables the organization to emphasize a balance between "Speed-to-market," "Strategic Impact," and "Resource-Use-Efficiency." (Figure 1) The goal is to optimize these orientations simultaneously, in order to realize significant economic gain. Management wants the economic gains, not just "more projects faster." Unfortunately, understanding what PPM is and getting an organization to do it well are two entirely different issues.

**Implementation Challenge**  
Implementing PPM is a major challenge for every organization. Many factors slow down benefit gains and some factors even worsen the affect of others. For example, at the start of PPM, data is seldom reliable

or timely. Often, the exact metrics needed to communicate with management are not known. Even with good data in-hand, some managers may perceive PPM as undermining current deci-

What, then, is the best way to deploy PPM? What implementation practices deliver the most benefits fastest? These questions led The Adept Group to conduct research specific to

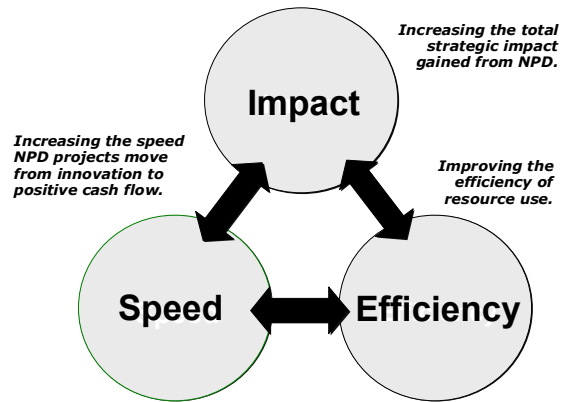


Figure 1: PPM requires balancing three key benefit areas

sion-making. These three factors (metrics, data gathering and management support) become entwined. An inability to understand such factors and their relationship with one another makes PPM implementations very demanding.

### How You Implement PPM Matters

Consider some of the real concerns stated by managers trying to implement PPM. (Side box) Notice the variety. It would be impossible to address all of these challenges with a single action. Some form of a broad, coordinated approach must be taken.

PPM implementation. Approximately 175 companies participated, representing a wide distribution of company types, duration of PPM practices, and implementation experiences.

The first step in the implementation research was to compile and categorize the "what's" and "how's" of PPM, garnered from multiple sources. The result was a list of twenty-six different components that were divided into seven logical groupings. (Table 1)

### Components of PPM

Two of the groups of components are primary or fundamental to PPM:

# Spiral-Up Implementation

- ♦ Mix Management, and
- ♦ Throughput Management.

Combined, the components within these two groups form the basics of PPM: identifying which projects to work on, and determining the resources assigned to each. The other five groups are secondary or supportive to the primary groups. Yet, all component groups have notable influence on benefit accrual.

Another way of looking at this relationship is that organizations want the gains

Component Grouping	Components
Mix Management	Project Selection Criteria Mix Criteria Strategic Buckets Project Impact Dependencies Mix Optimization Analysis
Throughput Management	Project Management Foundation Project Prioritization Resources to Project Assignments Resource Use Forecasts Critical Chain Buffer Management
Measures / Methods	Metrics Financial Priority Listing Risk Assessment Project Complexity
Software / Data	Data Gathering & Handling View Creation Software Enterprise Software
NPD Processes	Portfolio Objects being managed Stage-gate redesign Front-end concept generation Product Line Planning
Top Management	Top Management Involvement Top Management Proficiency Top Management Focus
Implementation Focus	Organizational Challenges Implementation Team Focus

Table 1: PPM components by grouping

Rather than seeking a single overall best practice, CMM suggests that, in complex systems, organizations should focus on attaining each maturity level, one at a time. All requisite practices must be in place, in the right order, for the system to be effective. CMM recognizes that certain practices rely on certain other practices. For example, it is difficult to do 1) software user interface planning without first understanding 2) customer use requirements. It is not sufficient to establish only a couple of the practices in the complex system of software development.

The same is true for PPM. Consistent practices on certain PPM components are necessary for other components to be effective. In PPM, for instance, establishing the project mix component without establishing a data gathering component will not yield much benefit to the organization. Such out-of-sync deployment of practices may even cause harm to the initiative. The implementation of PPM components must be coordinated. The research analysis sought to do this. By using implementation experience, logic, and trial and error to determine required relationships of components, the analysis identified five critical maturity levels for PPM implementation. (A detailed Matrix of "Component versus Maturity Levels" is available from the author)

### Spiral-Up Approach

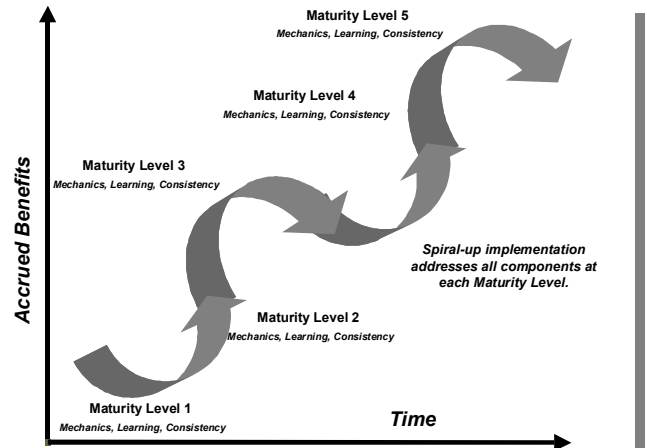


Figure 2: PPM implementation advance through maturity levels

### Statements of Mangers'

#### Top Challenges to PPM Implementation

- ♦ Managing reduced resources while maintaining aggressive launch schedule.
- ♦ Thinking and acting long term (strategically), but managing quarter-to-quarter
- ♦ Gaining buy-in from the entire organization
- ♦ Poor analysis due to emphasis on speed and lack of good information
- ♦ Systematically looking at strategic objectives and the resource pool to understand how to deploy available resources and set priorities
- ♦ Not having consistent metrics to measure key characteristics of projects.
- ♦ Lacking commitment to spend sufficient time to manage the portfolio.
- ♦ Transferring practices broadly across the organization.
- ♦ The time it takes to get up the curve.
- ♦ Making adjustments due to our ever-changing environment; adjusting for resource needs and availability, along with competitive landscape
- ♦ Having better resource planning tools
- ♦ Consistent use of the process. Consistent data assumptions across NPD projects.
- ♦ Pulling Product Management, Marketing Management, and Senior Management out of the daily fire-fighting.
- ♦ Too many new project requests (many driven by customers) coming into an already full pipeline.
- ♦ We have a culture of wanting to do everything and not saying no.
- ♦ Defining and getting accurate data input for metrics.
- ♦ Integrating project management and portfolio management into a seamless system with single point of data entry.
- ♦ Articulating the strategic success measures.
- ♦ Having the right portfolio analysis and resource management tools

from Mix Management and Throughput Management. To realize these gains, however, progress must also be made with the components in the supportive groups.

### Capability Maturity

A key finding in the implementation research came from the wide distribution of both experience and benefits accrued from PPM. Such distribution of performance is the norm in complex organizational systems. IBM confronted this issue with software development. What they learned was that the quality of resulting software (the output of the system) is dependent upon the maturity of the capabilities a group has in developing software. More notably, they identified maturity levels through which software groups had to progress in order to improve their output. IBM's work led to what is commonly known as a "Capability Maturity Model" (CMM) for software development. The Software Engineering Institute at Carnegie Mellon Institute later put CMM into broad practice across the software industry.

# Spiral-Up Implementation

PPM implementation teams can accelerate the accrual of benefits and leverage knowledge of the Capability Maturity Model simply by addressing one maturity level at a time. Implementations can proceed to the next maturity level once teams establish the required components for a current maturity level. This iterative approach to components across maturity levels implies that PPM implementation is like moving up a spiral. (Figure 2)

A Spiral-Up Implementation enables organizations to gain benefits faster and to build steadily on investments in each PPM component. Consider the progression of the data storage component. (Table 2) For most organizations, data storage will advance from having none at all to having a central repository, supporting a web-based system. But the steps in between are very important. The use of tools such as Microsoft Excel and Access in Maturity Levels 2 and 3 enable great flexibility. These tools are easy to use and do not require an IT department's involvement. The interim practice, in effect, helps teams establish other components such as specific metrics, strategic-buckets, and criteria and guidelines. "Hard wiring" these components into a central data repository before they are both known and accepted would be significantly more difficult and time consuming.

## Moving Up the Spiral

"Consistency-in-use" of each component is the most important factor driving the accrual of benefits. The research shows that the total number of components carried out consistently by an organization correlates strongly with the total benefits accrued to the organization. A key factor in Spiral-Up Implementation, therefore, is getting people across the organization to use each component consistently, i.e., at an appropriate frequency and in a quality manner. For each component within each maturity

level, the Spiral-Up Implementation steps should be to:

1. Iron-out the mechanics of each component's use,
2. Learn and understand the influences on the components, altering or adapting them as needed; and,
3. Increase the consistency with which the organization uses each component.

There are some important milestones when implementing PPM. For instance, the percentage of all projects included in an organization's PPM process has significant bearing on the amount of benefit gained. Organizations greatly undermine benefit accrual when they include less than 80 percent of their projects in PPM. PPM

data repository.

These three components, when taken together, offer the biggest steps forward in PPM. Collectively, they anchor the PPM

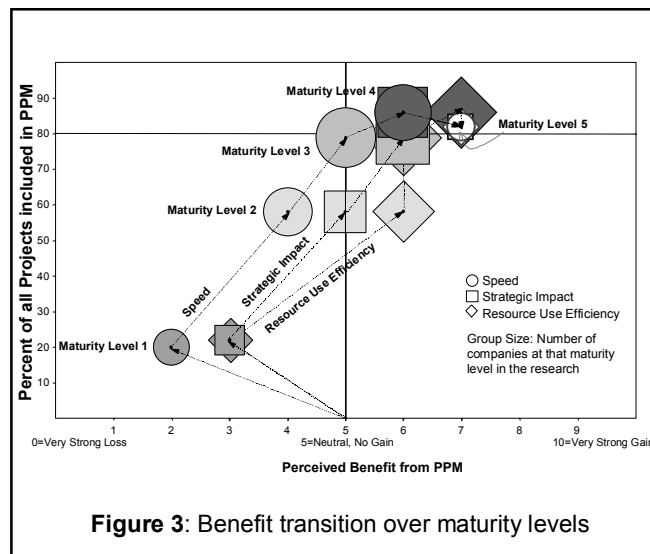
<b>Maturity Level 1:</b>	<i>no data storage</i>
<b>Maturity Level 2-3:</b>	<i>data storage in multiple MS Excel/Access sources</i>
<b>Maturity Level 4:</b>	<i>data storage in a single database</i>
<b>Maturity Level 5:</b>	<i>central storage for a web-based system.</i>

**Table 2:** Progression of data storage across maturity levels

implementation. Yet, even though they are necessary practices, they are not sufficient, by themselves, to sustain the initiative.

The progression of benefits from PPM is insightful. (Figure 3) During early maturity levels, PPM seems to impact speed to market negatively. However, once an organization emerges from Maturity Level 3, positive gains appear in all benefit areas (Speed-to-Market, Strategic Impact, and Resource-Use-Efficiency). This is an important turning point for Spiral-Up Implementation. Here, benefits gains are significant enough for the organization to not want to lose them. As a result, managers across the organization will be, for the most part, very supportive of PPM.

Figure 4 below displays another way of plotting the normal path of PPM benefits accrual. This U-shaped progression implies that implementations tend to struggle through the first two maturity levels, before delivering net gains. Strong management and leadership support is necessary to get through this negative benefit period. Benefit "break-even" should occur in the third maturity level.



serves little purpose if too many projects run outside of the portfolio. Indeed, consistency of at least an 80 percent inclusion rate is a point of critical mass for effective PPM.

Three other critical turning points also anchor benefit accrual:

1. The consistent use of portfolio mix criteria and guidelines,
2. The consistent use of resource and pipeline bottleneck forecasting, and
3. The consistent use of a centralized

## Duration of Maturity Levels

Several factors contribute to how long it takes an organization to progress through each maturity level. (Table 3) The PPM implementation research suggests that the larger the company (i.e., the more people contributing to NPD) or the longer the life-cycle of the resulting products, the more time it takes to realize benefit gains. This makes perfect sense. Gaining "consistency-in-use" of components, a precursor to benefit gains, will undoubtedly be

# Spiral-Up Implementation

more difficult and take more time in larger organizations. For companies with long product lifecycles, the perception of economic benefit gain will be discounted due to inherently long lead times. While the focus should be on gaining benefits as quickly as possible, all companies will not progress through maturity levels at the same pace.

2. Keeping a concerted focus on the right component practices at each maturity level.

Both the implementation team and top management hold responsibility to address these factors effectively.

Also, because of the significant economic value of PPM benefits, a strong case can be made for organizations to complement internal skills and capabilities with those of an experienced outsider or consulting firm. Experts from outside of the organization can help organize efforts, minimize hindrances, and speed the consistency-in-use of components. They can offer experience, insights, and an independence from organizational issues.

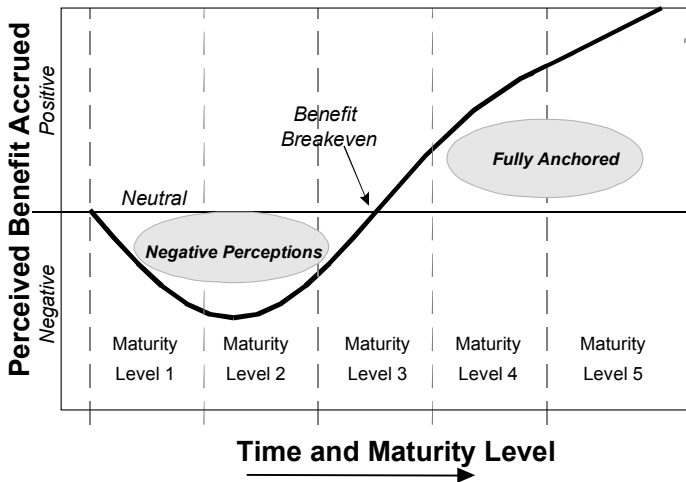


Figure 4: U-shaped benefit accrual over maturity levels

Two significant influences on the speed of benefit accrual are controllable, though:

1. Understanding and counteracting the hindrances to Spiral-Up Implementa-

tion. These contributions can be especially valuable to lean organizations. Managers can accelerate economic gains simply by using outside experts to reduce the duration of each maturity level.

### Maturity Levels

**Maturity Level 1: Establishing the Groundwork**  
During the first stage, very little is anchored. Top management involvement, not just their blessing, is the most critical component.

**Maturity Level 2: Setting Up Decisions**  
Efforts should focus on establishing strategic “buckets” for projects, delineating criteria / guidelines for what the mix of projects should be, and how the full PPM process should flow.

**Maturity Level 3: Anchoring The Process**  
Both portfolio-mix and pipeline throughput components become anchored. The objective is to get the organization to recognize that PPM is delivering benefits.

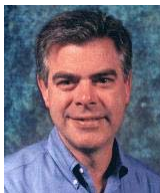
**Maturity Level 4: Turning Up The Gains**  
The portfolio now includes projects from all NPD processes (Product Planning, Front-End, Stage-gate, and Product Management). Advanced practices may include modeling of project characterizations (such as Monte Carlo simulations) and Critical Chain Buffer Management.

**Maturity Level 5: Automating the Flow**  
Automation is the objective of the fifth level of maturity. Previous shortcomings will become clear in this maturity level

The economic benefits of PPM can be tremendous. But putting PPM process in place is not easy. The Spiral-Up Implementation of PPM helps organizations overcome the complexity of PPM implementations by leveraging a Capability Maturity Model. The challenge is to understand and execute each component during each maturity level. Organizations seeking PPM benefits should strive to learn the nuances of doing so.

Maturity Level	Maturity Level	Maturity Level	Maturity Level	Maturity Level
1	2	3	4	5
2 to 4 months	2 to 6 months	2 to 9 months	4 to 9 months	6 to 9 months

Table 3: Duration of maturity levels



Paul O'Connor is an expert in the field of New Product Development Productivity. He consults on process implementations and improving NPD performance. His article in the Journal of Product Innovation Management entitle "Implementing a Stage-Gate Process: A Multi-Company Perspective" has been cited by numerous authors and is used as a teaching aid in several MBA programs. He is also a contributing author on implementing product development process to The Handbook of New Product Development. Mr. O'Connor is a certified New Product Development Professional and is also a Past-President of PDMA.

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